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A WEEKLY EPITOME
OF
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MEDICINE.

(454) The Parasite of Quartan Ague.

IN the *Zeitschrift für Hygiene*, vol. x, p. 137, appears the first of a series of papers by Camillo Golgi, demonstrating by means of photography the development of the parasite found in malarious fevers. This paper deals with the amœba malariæ febris quartanæ, the form found in the quartan type. In 1880 Laveran stated that these parasites are present in every case of malaria, and in no other condition, and that they are probably the cause of the disease. His observations have been confirmed by pathologists in all parts of the world, and at the present time the weight of proof seems to be in favour of his contention. In the above paper Golgi claims to have been the first to demonstrate that the different forms described as occurring in the blood are simply modifications of one form, and, further, that these metamorphoses follow each other according to a fixed law. This development takes place within, and leads to the destruction of the red blood corpuscles. At first the amœba-like parasite is small and non-pigmented; it increases in size at the expense of the substance of the blood corpuscles, becomes pigmented, and, after passing through a series of metamorphoses, finally ends in a process of segmentation. This process of segmentation takes place at the same time as, or a short time before, the onset of the febrile paroxysm, and has for its object the formation of a new generation of the parasites. The pigment granules stored up in the body of the parasite take no part in this process of segmentation, and hence, on its completion, escape into the blood plasma, where they are seized upon by the white blood corpuscles and cells of the liver, spleen, etc. The new brood of parasites at once pass into fresh red blood corpuscles, and so commences anew the cycle of metamorphoses leading up to the next paroxysm of fever. The period of time which elapses between the entrance of the parasites into the red blood corpuscles and their segmentation is exactly three days, and hence arises the periodicity of the quartan type of malarial fever. During the first and second days the parasite passes through the various phases of its development within the blood corpuscles, on the third day segmentation takes place, the new brood is set free, and fever results; in other words, the period of apyrexia corresponds with the endoglobular growth of the parasite. Golgi states that a knowledge of these developmental stages is of immense practical importance for the purpose of diagnosis, by which an almost mathematical degree of accuracy can be arrived at, and that it is no exaggeration to say that by the simple microscopic examination of a few preparations of blood the physician is in a position to tell when the last attack of fever occurred, to foretell the time of the next attack, and further to recognise what type of malarial fever he is dealing with. The simple quartan fever is explained by Golgi as resulting from the development in the blood of one set of the parasites, which ripen every three days, while the double and triple quartan fevers are caused by the development of two and three sets respectively, coming to maturity on consecutive days. This hypothesis, of course, cannot apply to the tertian type of malarious fever, since in this the febrile paroxysms follow each other with an interval of only one day of apyrexia intervening, instead of two days as in the case of the quartan type. Golgi is of opinion that he has brought forward satisfactory evidence to show that tertian ague depends on the presence in the blood of a distinct variety of the malaria parasite, which passes through its developmental phases in two days instead of in three. In regard to classification, Golgi holds that the various clinical types of intermittent fever are caused by varieties of one and the same parasitic species, and that this belongs to the genus amœba. The twelve photographs which illustrate his first paper deal with the development of the parasite of quartan fever, and show, surrounded by normal red blood corpuscles, its successive metamorphoses. The photographs, which are very fine, were taken by means of Zeiss's microphotographic apparatus.

(455) Predisposition to Tuberculous Infection.

PROFESSOR BIRCH-HIRSCHFELD, of Leipzig, comments on the question of predisposition to tuberculous infection (*Wiener med. Blätter*, No. 17, 1891), pointing out that the prevailing theory of direct infection by inoculation of the bacillus is rapidly coming to be regarded as the only important factor in the spread of the disease. Predisposition may be classed as "general" and "local," meaning by the first term a greater or less resistance to the development of tubercle; and by the second the various factors that incline an individual organ or part to become tuberculous. General predisposition may be inherited or acquired, as in the case of diabetes. Local predisposition may depend upon the condition of the local tissues, the opportunities which they afford for the entrance of the tuberculous virus, and the amount of resistance which they set up against its development. Inherited predisposition is strengthened by the fact that up to the

present time the evidence of direct conveyance of the disease from mother to fœtus *in utero* has not been well established in the human species, although undoubted instances have been reported as occurring amongst certain animals. Dr. Birch-Hirschfeld relates a case in which a fœtus was removed from the uterus of a woman, aged 23, within a few moments of her death from general tuberculosis, without any damage being done to the placenta. Portions of the liver, spleen, and kidney of the fœtus produced tuberculous disease when inoculated into rabbits and guinea-pigs, but only in the capillaries of the liver could any tubercle bacilli be discovered. In the placenta, however, the villous spaces were crowded with bacilli. The very limited evidence of tuberculous material in the fœtus might serve as an explanation of the fact that children of tuberculous parents are often born without any manifestations of tuberculous disease, and yet appear to develop tubercle during the first few years of life. A limited infection by the maternal bacilli, perhaps during the process of birth, might remain latent in one or more organs until other circumstances contribute to their development. It is thus possible that confusion may exist between "latent tubercle" and "tuberculous predisposition." That latent tubercle may remain quiescent, especially in bronchial glands, until awakened by an attack of acute disease such as measles or whooping-cough, is well known. The frequent occurrence of such latent tuberculous foci, without any other evidence of tuberculous disease, goes far to prove that resistance to tubercle is as powerful a factor as predisposition. The congestive influences of valvular disease of the heart and of emphysema upon the connective tissues of the lungs are examples of some of the mechanical causes which constitute resistance.

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(456) Identity of Small-pox and Cow-pox.

MM. Eternod and Haxiers (*Sem. Méd.*, 1890, No. 58), from the results of their experiments on the transference of small-pox from man to the calf, are convinced that small-pox and cow-pox are caused by the same virus. For the purpose of inoculation small-pox lymph from cases varying in severity was used, and was rubbed into a moderately large extent of scarified skin in the abdominal region of the calf. The first inoculation was followed in every case by a scanty crop of pustules at the spot chosen. This eruption had at first very little resemblance to typical cow-pox, but on transferring the disease from calf to calf it became more and more characteristic, until, in the opinion of the authors, it was impossible to distinguish it from true cow-pox. The calves vaccinated in this way with human small-pox lymph were found in every case to be refractory to vaccination with ordinary cow-pox lymph.

SURGERY.

(457) Operative Treatment of Tuberculous Disease of the Hip and Knee in Children.

At the fourth Congress of Russian Medical Practitioners, held early in the year, Dr. L. P. Alexandrow stated the following conclusions on the treatment of tuberculosis of the hip and knee in children, based on observations of seventy-seven cases treated in the Olga Hospital, Moscow (*Centralblatt für Chirurgie*, No. 18). In default of any specific means of dealing with tuberculosis, operative interference is regarded as the most rational method of treating tuberculous diseases of joints. The danger attending such treatment is very slight, and whilst the development of miliary tuberculosis after operation is rarely observed, non-operative treatment does not guard the patient against any such infection. A great advantage of operative treatment is the rapidity of the cure, and there is a further advantage that the patient is not confined for a long period in bed. The best operation for children is arthrectomy, with removal only of the diseased parts. In dealing with the hip, however, it is necessary, in order to remove any deep-seated disease in the acetabulum, to resect the head of the femur. The author holds that one should aim at closure of the whole wound by primary intention. Drainage and the retention of numerous ligatures in the wound prevent rapid healing, and tend to the formation of fistulæ. It is better to dispense with drainage tubes, and to close the wound by deep sutures. If healing takes place by primary intention the duration of the after-treatment is much shortened, and the patient may be enabled in the course of the third or fourth week to get about on crutches. During convalescence massage of the muscles of the affected extremity would be beneficial, but passive movements of the joint on which the operation has been performed should not be practised unless with great care. The use of any retentive apparatus is objected to as being likely to cause atrophy both of muscles and of bones. In patients who are not in a position to undergo a long-continued treatment by massage, firm ankylosis, it is stated, will be found preferable to free mobility of the joint, as the former condition ensures greater strength of the limb. After arthrectomy in the knee in children there is usually some angular distortion in consequence of the difficulty of keeping the limb in a straight position. In 43 of the 77 cases treated by the author the hip was the affected joint, and in the remaining 34 the knee. Of the cases of hip-joint disease, 3 were fatal, though not through surgical interference; in 32 cases the operation was completely successful, and in 8 fistulæ subsequently formed. Arthrectomy in the knee was followed by early death in 3 cases, and in 28 cases by complete recovery.

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(458) Treatment of Contraction of the Ileo-Cæcal Valve.

In the *Bulletin de l'Académie de Médecine*, No. 52, December, 1890, p. 856, M. Péan discusses the treatment of this rare affection. He could only find three cases recorded in which the contraction was caused by new growths, and five in which it was inflammatory. The operations which have been done to cure these cases include artificial anus, digital dilatation, and resection. After discussing the various cases in which these proceedings have been practised, Péan describes his own operation, which consists in forming, without taking away any of the intestinal tube, a dilatation at the seat of contraction. To do this the abdomen is opened by an incision above and parallel to Poupart's ligament, and the end of the ileum and the cæcum are drawn into the wound. The ileo-cæcal valve region is then shut off from the rest of the bowel with rubber tubing passed round in the usual way by perforating the mesentery. The intestine is then opened on each side of the valve by an incision 8 centimetres long. The valve is inspected, and, if necessary, resected or incised. After whatever is necessary has been

done, the incision is closed by bringing together the two ends of the wound, thus opposing the peritoneal surface of the ileum to that of the cæcum. In doing this the incision becomes at first lozenge-shaped, and, lastly, transverse. The surfaces are united with a double row of sutures, the first of catgut, and including the mucous and muscular coats; the second of carbolised silk, taking in the serous and part of the muscular coat. The operation is finished in the usual way. In two cases in which this operation has been done the after-course has been most simple. The first day they had broth, milk, cognac, and, during the night, ice compresses upon the abdomen. The following days they were without fever, and one patient imprudently got up on the fifth day and went for a drive on the twelfth, and on the twentieth returned to Egypt. There has been no relapse in either case.

(459) The Form and Calibre of the Trachea.

Dr. Lejars, of Paris, has lately published (*Revue de Chirurgie*, No. 4, 1891) the results of some researches, which show that the trachea in a young living subject differs much in shape and size from that of the cadaver. In the former the posterior extremities of the elastic cartilages are brought together by the transverse muscular fibres, so that the calibre of the tube is much diminished. In subjects of advanced age, as the muscular fibres waste and the cartilages become ossified, the trachea becomes enlarged and resembles more and more the organ as it appears after death. The form of the trachea during life is far from being regular and symmetrical, and, Dr. Lejars asserts, one rarely finds a symmetrical cartilage. The tube tends to be flattened from side to side above, and from before backwards in its lower segment. It usually presents two well-marked depressions—one in front corresponding to the aorta, the other higher up on the left side, caused by the pressure of the left lobe of the thyroid body. Reference is made to the fact noted by Quenu and Witzel that sometimes during the performance of tracheotomy the calibre of the air tube is much diminished in consequence of the inward projection of its posterior membranous wall. This results, it is held, from close approximation of the posterior extremities of the divided cartilages after their cut margins in front have been separated on the introduction of the cannula. Dr. Lejars draws the conclusions from his investigations that in tracheotomy as now usually performed the incision in the air tube is too long and the cannulæ are too large.

MIDWIFERY AND DISEASES OF WOMEN.

(460) Cancer of Ovary; Detached Outgrowths.

Dr. Gottschalk (*Centralb. f. Gynäk.*, March 28th, 1891) exhibited at the Berlin Obstetrical Society a specimen of cancerous tumour of the right ovary successfully removed from a virgin aged 65. It had been noticed for two years, and occasional floodings had taken place, so that myoma was suspected. Abdominal section was performed; abundant omental, parietal, and intestinal adhesions had to be set free, and the bladder—drawn up high out of the pelvis—was carefully dissected off the front of the tumour. The pedicle was broad, short, and twisted. In exploring Douglas's pouch for metastatic deposits, a mass of tumour substance as big as a crab-apple was found lying free in that peritoneal fold. Dr. Gottschalk believed that it had been detached possibly during examination of the tumour. The breaking off of an outgrowth must greatly favour diffusion of the malignant growth, as the detached piece will set up inflammation of the adjacent serous membrane and thus contract adhesions. Hence all cases of solid pelvic and abdomino-pelvic tumours should be examined with great care. No true metastatic deposit was discovered in Dr. Gottschalk's case, and though the patient was in an advanced stage of emaciation before operation, she made a very good recovery.

(461) Giant Fœtus Extracted Entire: Breech Presentation.

M. Maygrier (*Bulletins et Mémoires de la Soc. Obstét. et Gynéc. de Paris*, February, 1891) exhibited before the Society a female fœtus weighing 14¾ lbs. av. (6.7½ kilogrammes). Its total length was 22½ inches. The occipito-frontal measurement was 4¾ inches, the biparietal 3$\frac{7}{10}$ inches. The mother was aged 39, she had been pregnant six times and had borne four children—all very big—to term. The child, on this occasion, was born on January 12th, 1891, at term. The mother's abdomen was abnormally large during the last months, when glycosuria set in. The amount of urine and proportion of sugar were both very high. Œdema of the vulva and pruritus harassed the patient. Labour lasted fifteen hours and a half. At first a large bag of waters with a prolapsed funis presented; the pulsations in the cord ceased entirely. When the waters broke a great quantity of liquor amnii escaped and a breech presentation was diagnosed. The pains were vigorous, and the right leg was brought down with difficulty. Two hours of continuous traction were needed to extract the legs, the breech, and the trunk. The arms being raised, it cost much time and fatigue to bring them down. The head was delivered with perfect ease. The patient made a good recovery.

(462) Toxic Spasm of Parturient Uterus overcome by Antipyrin.

Dr. Wright, of Toronto (*Archives of Gynæcol.*, New York, April, 1891) reports the case of a primipara, aged 22, of sedentary habits. The pelvic outlet was slightly narrow; pregnancy was normal. The os was rigid, and the membranes ruptured prematurely, so that the first stage of labour lasted over twenty-four hours, although three 15-grain doses of hydrate of chloral were given to relax the os. The head then descended rapidly half down the vaginal canal, but then the progress of labour became slow. At the end of forty hours the head was well down in the perineum, but the rigidity of external parts rendered the pains ineffectual. Symptoms of exhaustion then began to appear. The pains became shorter and more frequent, the pulse increased to over 100, and the patient complained of nausea and thirst. It soon became impossible to make out distinct intervals between the pains, and, on examination, the uterus was found retracted, and in a state of tonic contraction. Three 15-grain doses of antipyrin, to be taked at intervals of one quarter of an hour, were prescribed. Before the second dose had been given the patient felt easier; after the third the pains were about three minutes apart, and the tetanic contractions had disappeared. The head, being very large in proportion to the outlet, was delivered with forceps

under chloroform. The uterus took three-quarters of an hour to contract properly after the administration of ergot in drachm doses. Dr. Wright considers that this case shows the value of antipyrin in uterine tetanus. It might more beneficially be used before the muscular fibres and nerve centres are exhausted by prolonged tonic contractions.

(463) Effect of Leeches in the Uterine Cavity.

Dr. Montane (*Nouvelles Archiv. d'Obst. et de Gynéc.*, March, 1891) states that he is not accustomed to plug the os with wool when applying leeches to the cervix, but simply catches each leech with forceps with large teeth, places it against the cervix, and lets go of it when it has taken a firm hold of the tissues. He has never seen a leech shift its position. Once, when he was applying leeches, the patient sneezed violently, so that the Ferguson speculum was shot out of the vulva. When reintroduced three leeches were found still adherent to the cervix, and a fourth rapidly escaped up the cervix, and ensconced itself in the uterine cavity before it could be seized with a forceps. A red rubber sound was passed up the cervix, and a small amount of warm carbolised water thrown into the uterus. The water came back in intermittent jets, and at length a black body appeared, which was seized with forceps; it was the cephalic end of the leech, which was easily extracted. The patient knew nothing of the misadventure. Dr. Montane's colleague, Dr. Arrango, describes another case where a leech could not be displaced so speedily from the uterine cavity. It set up intense pain, which, it is remarkable to note, was referred to the region of the right ovary. Violent convulsions followed, and lasted for nearly half an hour, leaving the patient in a most distressing state of excitement, the pain being unabated. The fits returned. Three hours after the beginning of the pain the patient was seized with violent uterine contractions, compared by her to the sensations experienced during an abortion, the leech, perfectly gorged with blood, escaped from the vulva, the pains and convulsions thenceforth ceasing entirely.

(464) Ventrofixatio Uteri.

Dr. Sperling (*Deutsche med. Wochenschr.*, 1891, No. 5) describes nineteen cases of this operation, performed by Professor Leopold for severe cases of retroflexion. The Professor himself adds a note of warning against indiscriminate operating for retroflexion. Hysterorrhaphy should only be done when it is evident that the patient suffers severely from the displacement, and from no other cause such as hereditary nervousness, hypochondriasis, or malnutrition. In four of the operation cases, there was retroflexion alone; in six, disease of the left, and in 7 disease of both, appendages. In none were the right appendages alone affected. In one case there was a myoma on the fundus uteri; in one prolapsus of the uterus and both vaginal walls. Sixteen of the patients were entirely freed from their pains, two feel constitutionally better, though they still suffer from trifling local pain, three have borne children since hysterorrhaphy; the uterus in all these instances kept its place against the parietes after delivery, which occurred at term. In one case no relief followed hysterorrhaphy; the uterus kept in its artificial position, but great pain occurred at the period; there was reason to believe that disease of both ovaries also existed, and that their removal would have been advisable. In two of the last nine cases, where both appendages were removed, menstruation continued. In only one case did pains in the bladder occur after hysterorrhaphy, but in this instance they were very severe. The operation itself was performed after Leopold's method, already described by that author (*Sammlung klin. Vorträge*, No. 333). From one to three sutures were passed through the uterus and the parietes. In most of the cases the serous coat of the fundus was dissected off.

DISEASES OF CHILDREN.

(465) Infantile Cerebral Palsies.

Professor Sachs, in a paper read before the New York Neurological Society (*New York Med. Journ.*, May 2nd, 1891), discusses the pathology of the cerebral paralyses of infancy. He divides them into the congenital cases, that is, those occurring before birth and due to gross cerebral defects; birth palsies, the result of protracted labour, where meningeal, or more rarely intracerebral, hæmorrhage has taken place; and those acquired after birth, in which in agreement with the majority of recent writers on this subject, he considers vascular lesions as by far the most common cause; next to these he places chronic meningitis and hydrocephalus; and lastly, Strümpell's primary encephalitis. This last condition he believes to be excessively rare, and he holds that the theory should be accepted with some reserve. The diagnosis of the different kinds of vascular lesion, that is, embolism, thrombosis, and hæmorrhage, he admits to be sometimes very difficult, but when hæmorrhage can be diagnosed, he thinks that surgical interference is imperatively called for. If the symptoms point to the formation of a large clot over the motor area of a child otherwise healthy and strong enough to endure the operation, he recommends that an attempt should be made to remove the clot in order at once to relieve pressure upon the given area, and to prevent secondary degeneration. This latter point would be certainly well worth attaining, but the diagnosis of intracranial hæmorrhage in the young is by no means so easy. Still, where it can be made, there is no objection to the use of the trephine.

(466) Tuberculous Testicle in Boys.

In an elaborate essay MM. V. Hutinel and E. Deschamps (*Arch. Gén. de Méd.*, March and April, 1891) state that tuberculosis of the testicle, though not common in boys, is not very rare. It may occur at any age, having been observed in infants only one month old. Injuries probably play an important part in determining the onset of the disease, an opinion which is thought to be confirmed by the more frequent commencement of tuberculosis in the left testicle, which is the more exposed. The onset is sometimes remarkably acute, and as there is often in such cases a slight urethral discharge, a hasty diagnosis may be mistaken. In a certain small proportion of cases the lesion appears to be primary, but in many cases it can be proved, and in a large number surmised with great probability, that the testicular affection is secondary. The onset in a large proportion of the cases is insidious, and the changes in the gland are of the type to which the term "scrofulous" is generally applied.

In mild chronic cases the affected testicle may atrophy and the boy may recover without any other organ becoming involved; in other cases a chronic abscess forms, and either with or without this complication the glands become secondarily affected. Tuberculous testicle appears in some cases to be secondary to tuberculous peritonitis, and the converse is also true. In the child the testicle proper is more often attacked than the epididymis, the converse being the case in the adult; in some cases the primary seat of the tuberculosis appears to be the tunica vaginalis. From a microscopical study of the lesions the authors are led to the conclusion that in children the tuberculous process develops chiefly in relation with the blood vessels in the interstitial tissue or in the envelopes of the glands, that it is not very virulent, but tends towards sclerosis and spontaneous cure. Nevertheless, prognosis should always be guarded, since in a large proportion of the cases the testicle is not the only organ affected; in particular, caseous degeneration of the mediastinal and mesenteric glands is almost always found. Diagnosis is not generally difficult; sarcoma of the testicle is very rare in children, it is less hard, and grows much more rapidly; syphilitic disease of the testicle is met with in very young children more often than tuberculosis; it generally affects both organs, rendering them hard, large, and painless; the epididymis is less often attacked by syphilis than by tuberculosis, and as a rule other signs of syphilis can be discovered. The authors consider that local treatment should be avoided as far as possible; the organ should be carefully protected from injury, and if an abscess form, it should be opened with the thermo-cautery and treated antiseptically; suppuration may sometimes be prevented by ignipuncture. Castration is not good treatment. The authors consider that the general medical treatment is most important—cod-liver oil, creasote, arsenic, phosphate of lime, careful feeding, together with sea air and sea baths or country air and salt baths (Salies de Béarn, Kreuznach).

(467) Membranous Sore Throat in Scarlet Fever.

M. H. GILLET relates (*Annales de la Policlinique de Paris*, May, 1891) a case of membranous angina commencing on the third day of a well marked attack of scarlet fever; the false membrane, which was thin and whitish, covered the edges of the soft palate, the uvula, and the tonsils. The patient, aged 4½, died of asthenia on the sixth day. Cultivations were made during the life of the patient from the false membrane on the palate, and pure colonies of the staphylococcus pyogenes albus were obtained; the diphtheria bacillus was not present. This negative result M. Gillet points out is important, and the positive result is also of value, since it shows that the staphylococcus pyogenes may be added to the list of micro-organisms capable of producing false membranes. Widal has shown that in some cases such membranes are due to the streptococcus pyogenes, and M. Gillet states that Professor Jaccoud has recently found the pneumococcus almost pure in a false membrane on the tonsils and the pillars of the fauces. In this patient (lad of 19), there was swelling of the cervical glands and albuminuria, so that—especially in the absence of any symptoms of scarlet fever—the resemblance to diphtheria was very close. These observations are of importance both from the point of view of etiology and treatment.

PHARMACOLOGY AND THERAPEUTICS.

(468) Cantharidinate of Potassium in Pulmonary Tuberculosis.

AT a recent meeting of the Warsaw University Russian Medical Society, Professor L. I. Tümas (*Vratch*, No. 13, 1891, p. 247) presented a communication on six cases of pulmonary tuberculosis treated by Liebreich's method. All the patients were suffering from more or less early phthisis with broncho-pneumonia. Some of them were still fairly well nourished, the symptoms being limited to apical dulness, crepitant *râles*, moderate cough, with scanty expectoration, and slight laryngeal lesions. In three cases there were present violent cough, purulent sputa with abundant tubercle bacilli, exhausting night sweats, more or less extensive pulmonary lesions with small excavations, mild fever, and in one considerable emaciation. The following is a summary of the results: (1) Cough decreased in four patients, the sputa at first becoming more abundant and mucoid, afterwards (in five days or so) markedly decreasing in quantity. In two of the four the expectoration subsequently ceased altogether, a dry cough only remaining, while night sweats and fever disappeared, appetite improved, stools became regular, and weight increased 5 and 2 pounds within a fortnight. (2) As to physical signs, in the two cases just mentioned there were noticed clearing up of the pulmonary note on percussion, and decrease of moist *râles*. Of the other four patients, in three the pulmonary signs did not show any improvement, while in one they apparently grew worse. In such cases where laryngeal ulcers were present, subsidence of congestion and œdema of the vocal cords were observed. (3) Of toxic phenomena there were noticed (*a*) dysuria (in two cases after the injection of 0.0002 g.), which, however, speedily ceased after the internal administration of tincture of opium; (*b*) headache (in one), and (*c*) gastric pain (one). (4) The injections caused more or less intense local pain of twenty-four hours' duration, but no infiltration or suppuration. (5) On the whole the cantharidin treatment is decidedly beneficial in some cases, and hence deserves a further trial, its advantages being these: (*a*) the composition of the remedy is known to all; (*b*) the drug can be prepared by everybody; (*c*) it admits of precise dosage; (*d*) it does not give rise to any serious complications; (*e*) it can be safely applied in outdoor patients, and does not involve any change in the patient's usual mode of life. (6) The beneficial effects of cantharidin seem to depend upon its stimulating the vital activity of the systemic tissue cells and increasing their energy in the struggle against pathogenic agents—that is, cantharidin acts much in the same way as spermin or Brown-Séquard's testicular injections. (7) It is possible that cantharidin might be replaced by powdered cockroaches (*Blatta Orientalis*), which act comparatively less intensely on the nerve system, while exercising a decided stimulating influence on the heart. In the course of the discussion which followed, Dr. M. S. Vasilïeff stated that he obtained good results with cantharidin in two cases of surgical tuberculosis.

(469) Post-Mortem Appearances after the Use of Tuberculin.

PROFESSOR N. V. PETROFF, of St. Petersburg, records (*Vratch*, No. 4, 1891, p. 125) two cases of pulmonary phthisis. In one the patient was a man, aged 36, who had received three injections

of tuberculin (0.002, 0.003, and 0.005 gramme), and died four days after the last. At the necropsy the lungs were found adherent to the chest, the remaining pleural surface being congested, and lined with fibrinous films. Throughout both organs there were scattered groups of yellow, softened, unusually large tubercles, and a few small cavities. The pulmonary parenchyma, especially in the right lower lobe, in the area of extensive crops of tubercle, was engorged, and, in the latter region, traversed by small extravasations. There were also tuberculous ulcers on the tonsils, epiglottis, and intestines, and there were a few tubercles in the substance of the liver, spleen, and kidneys, the ulcers being encircled by a congested zone. The other patient, a woman, aged 34, had also died after three injections (0.0005, 0.001, and 0.002 g.), the last having been given a month before death. The condition of her lungs on the whole resembled that in the preceding case, but there were large cavities in the upper and lower lobes, and numberless small ones scattered all over the organs, giving a spongy appearance to a part of the left lower lobe where they were most numerous in both cases. The microscopical examination revealed (1) great dilatation of the blood vessels around the tuberculous foci and ulcers; (2) hæmorrhages into the alveoli; (3) infiltration of tubercles with multinuclear leucocytes, most dense at the circumference of the structures; (4) a similar infiltration around ulcers everywhere. In the second case the spongy pulmonary area proved to be altogether free from tubercles, the tissue containing small cavities, formed by destruction of alveoli. Dr. Petroff pointed out that (1) the changes detected in both cases differed widely from those usually found in tuberculosis; (2) they were of inflammatory nature; (3) the destruction of tubercles and formation of cavities in the second case showed that the inflammatory process was of a suppurative character; (4) there is every reason to believe that the unusual phenomena were directly due to the use of tuberculin; (5) in neither of the cases could there be discovered anything like sloughing of tubercles, or cleansing of tuberculous ulcers.

Professor Nikolai M. Luebimoff, of Kazan, publishes (*Vratch*, No. 8, 1891, p. 237) the results of the necropsy of a phthisical patient who had received eight injections of tuberculin in doses of from 0.001 to 0.003 gramme, the last having been given two days before death. The lungs were extensively adherent, their free surface being covered with fibrinous effusion. The upper portions of the organs contained large cavities, while the middle portions were studded with broncho-pneumonic caseous foci, the subpleural lesions being surrounded by extravasations. The lower portions of the lungs on section presented "a shagreen appearance, which was due to the presence of closely grouped minute granules, mostly grey, but occasionally yellowish in colour, varying in size from a poppycorn to a hemp seed." The lung tissue all through had a striking dark red colour. The right branch of the pulmonary artery was blocked by a thrombus, and the bronchial glands enlarged and dark red. Under the microscope the pulmonary substance showed an "extraordinary dilatation, here and there amounting to varicosity, of blood vessels around the broncho-pneumonic foci, the vessels and alveoli being choked with red blood corpuscles." The engorgement was so intense as to have caused some "alveoli to give way and to coalesce into a single hæmorrhagic cavity." There was a large extravasation in the stomach, occupying the pyloric region and presenting signs of incipient disintegration in its central area. The small intestine—especially the jejunum—likewise showed a considerable number of largish ecchymoses and numerous small ones, the serous coat being congested.

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(470) Chloride of Gold in Lupus.

Dr. J. Rüsin (*Meditzinskoïe Obozrenïe*, No. 5, 1891, p. 509) reports the case of a peasant woman, aged 40, with extensive lupus of thirteen years' standing, successfully treated by the subcutaneous injection of a 1 per cent. solution of chloride of gold in combination with a 1 per cent. solution of cyanide of potassium. Nearly the whole face, nose, and forehead were involved, the cheeks, forehead, chin, and hard palate being studded with ulcers, the discharge from which contained tubercle bacilli. In all, six injections were given in the course of eleven days, the total quantity of either of the salts amounting to $\frac{3}{100}$ grain, the individual doses of the chloride varying from $\frac{1}{1000}$ to $\frac{1}{100}$ grain, and those of the cyanide from $\frac{1}{1000}$ to $\frac{1}{125}$. On the second day of the treatment, the subjective state markedly improved; on the third, the swelling of the face subsided, some old scars began to shed cuticle, and a labial ulcer distinctly decreased; on the 6th, some ulcers on the cheeks and hard palate commenced to heal, while the facial tumefaction and pain disappeared altogether; on the twelfth, several ulcers soundly healed, and the remaining ones became clear and covered with healthy granulations. Of accessory phenomena, there were observed a kind of intoxication, drowsiness, rigor, and slight elevation of temperature. These symptoms made their appearance on the fourth day of the treatment, shortly after the injection of $\frac{1}{125}$ grain. They disappeared spontaneously the next day.

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(471) Vaccination in the Calf.

MM. Straus, Chambon, and Ménad (*Semaine Méd.*, 1890, No. 57) give some interesting results concerning vaccination in the calf. (1) Inoculation of the cornea with vaccine lymph was followed in from six to seven days by slight cloudiness of the centre of the cornea, which increased during the next few days, with acute conjunctivitis and photophobia. In a previously vaccinated calf this corneal inoculation gave rise to no symptoms. The next point investigated was whether this corneal vaccination conferred immunity or not. Three calves were inoculated in the cornea, and after twelve, twenty-five, and twenty-eight days respectively they were subjected to ordinary cutaneous vaccination in the abdominal region. Of these three, only the first showed any reaction, proving that corneal inoculation, although somewhat slower in its action, is just as efficacious as vaccination on the skin. (2) Inoculation into the anterior chamber of the eye gave rise to inflammation of the iris and cornea, and conferred immunity as certainly, and almost as quickly, as subcutaneous inoculation. (3) In regard to the intravenous injection of cow-pox lymph, which has been described by Chauveau as conferring immunity on horses but not on cattle, the authors repeated this experiment on four calves, with positive results in each case. They injected from a fraction of a drop to 3 cubic centimetres of the lymph, and were careful to prevent any inoculation of the skin during the operation. The ani-

mals were vaccinated in the ordinary way from ten to twenty days after the intravenous injection, without the occurrence of any reaction. (4) The transfusion of blood from an animal when the vaccine eruption is at its height into a non-vaccinated animal has given contradictory results in the hands of various investigators. The authors repeated the experiment in the following manner: A glass cannula was introduced into the carotid artery of one calf, and another into the jugular vein of a second. The two cannulæ were then united by an india-rubber tube of suitable length. The quantity of blood transfused was estimated by weighing the animals before and after the operation. In the first experiment about 400 grains of blood were taken from a calf on the seventh day of the eruption; after fourteen days the non-vaccinated calf into which this blood had been transfused was vaccinated in the ordinary way. This was followed by a typical eruption, showing that the intravenous injection had not conferred immunity. In the next experiments much larger quantities were used. Instead of 12 ounces, from 8 to 12 pounds of blood were transfused, and it was found that the animals received this huge quantity without hurt. After two to three weeks the calves experimented on were vaccinated cutaneously without any reaction. From this the authors conclude that to confer immunity by this method very considerable quantities of blood must be used. (5) Transfusion of blood from a calf which had been successfully vaccinated six weeks before into a non-vaccinated calf was found to have no effect. In one case as much as 12 pounds of blood was transfused without conferring immunity. (6) Cutaneous vaccination with filtered cow-pox lymph was the next point investigated. Five cubic centimetres of freshly collected calf lymph were mixed with an equal quantity of sterile broth, and filtered through a porcelain filter. Four cubic centimetres of the filtrate were injected subcutaneously into a calf without causing any local reaction. Eleven days later vaccination of the same animal with unfiltered lymph was followed by the typical eruption.

(472) Microcidine.

M. POLAILLON (*Semaine Médicale*, April 29th) has described a new antiseptic, which it is proposed to call "microcidine." It was discovered by Dr. Berlioz, of Grenoble, and is prepared by adding to fused naphthol β half its weight of caustic soda, and allowing the mixture to cool. The resulting mixture contains 75 per cent. of naphtholate of soda, the remaining 25 per cent. consisting of mixed naphthol and phenol compounds. It is a whitish powder, soluble in three times its own weight of water, yielding a brownish solution. It possesses the following advantages: it is a very powerful antiseptic, very slightly toxic, is not caustic, is cheap, and does not affect either instruments or clothes. From M. Berlioz's researches it would appear that its antiseptic power is inferior to that of sublimate or of naphthol, but that it is ten times greater than that of phenol, and twenty times as powerful as boric acid. Microcidine is excreted in large quantities by the way of the kidneys, and acts as an antipyretic. M. Polaillon has obtained good results from solutions containing 3 to 1,000 of the drug, used both as lotions and to impregnate the dressings in a variety of surgical affections. He finds that, under its influence, ulcers of the legs and suppurating wounds heal rapidly, and the smell from gangrenous wounds is soon destroyed. As regards recent wounds, the new lotion prevents suppuration at least as efficiently as phenol or naphthol solutions. For infected wounds it is desirable to use a somewhat stronger solution (5 to 1,000), but the weaker lotion will serve for most purposes, and may be employed in all cases in which an efficient antiseptic irrigation is required. On the whole, microcidine seems to deserve a place among the best and most harmless antiseptics.

PHYSIOLOGY.

(473) Estimation of Weight.

CHARPENTIER (*Arch. de Physiol.*, iii, p. 122, 1891) has made some experimental observations on the elements entering into our sensations of the weight of bodies. The most interesting of his conclusions are the following:—(1) The more muscles we use in order to raise a weight, or the thicker the muscles so used, the lighter we judge the weight to be. Thus a weight raised with both hands is judged to be lighter than when it is lifted with one hand. (2) The weight of a body is estimated to be less the greater the extent of skin surface it touches. Thus a large hollow metallic sphere is estimated to be lighter than a much smaller solid ball of precisely the same weight. The weight of an object is thus to a certain extent estimated by the specific pressure, that is, the pressure it exerts on the unit of surface. Still the sensations of weight decrease much more slowly than the size of the surface touched. (3) The sensation of weight is less the more the other muscles besides those actually raising the weight are exerted. Thus a weight raised with the right hand is estimated to be less when at the same time the left hand raises a weight, or when at the same time violent expiratory efforts are made.

(474) Coagulation of the Blood.

ARTHUS and PAGÉS (*Arch. de Physiol.*, 5, ii, p. 739, 1890), working in the Sorbonne under the direction of Dastre, find that when 25 cubic centimetres of a 0.9 per cent. solution of oxalate of potash are mixed with 25.5 cubic centimetres of blood (dog, ox, horse) the blood does not coagulate, either before or after putrefaction sets in. One per 1,000 of the oxalate is sufficient to prevent coagulation, and the same result occurs with corresponding soda and ammonia salts. The addition of 2 grains of ordinary soap, or stearate, or oleate of soda to 300 cubic centimetres of dog's blood also prevents coagulation. These salts and the fluorides also do not prevent coagulation in the same way as do the neutral salts, for example, sodic or magnesic sulphate. The former act in a much less amount (0.1 per cent. instead of 8 per cent.). The oxalic blood may be diluted to any extent, and it never coagulates, being in this respect unlike salted (M_2SO_4) blood. If, however, to 20 cubic centimetres of the oxalate blood there be added 2 cubic centimetres of a 1 per cent. solution of calcium chloride, within a few minutes a blood clot is formed. Blood only coagulates in the presence of soluble common salt; the substances (salts) which precipitate the calcium are coagulation-restraining reagents. Strontium salts act like the calcium salts, but salts of baryta and magnesium do not cause the blood to coagulate. It would seem that the calcium atom is a necessary constituent of

fibrin. From decalcified blood, just as from plasma, fibrinogen can be separated, so that fibrinogen is not changed into fibrin by the action of the fibrin ferment. It would, therefore, seem that the latter can act on the former only in the presence of a calcium salt, so that from fibrinogen an insoluble calcium compound fibrin is formed. As in the case of the casein of milk, one must distinguish precipitation of the fibrinogen from its coagulation, the processes being totally distinct. The fibrin on this theory corresponds to the cheese or casein coagulated by rennet.

DERMATOLOGY.

(475) Diabetic Xanthoma and its Relation to Ordinary Xanthoma.

DR. ROBINSON examined (*Brit. Journ. of Derm.*, April, 1891) tissue from a well-marked case of diabetic xanthoma which was under his care. The eruption was very abundant. Within four months from its commencement there existed hundreds of papules, chiefly on the nates and loins and parts of the limbs. Careful histological examination showed that the structure in this case was almost identical with that of ordinary xanthoma, as described by De Vinentiis, Chambard, Touton, and others. The intensity of the process is more considerable in this disease than in ordinary xanthoma, and the circulation of the parts affected is more rapidly disturbed, which accounts, according to the author's view, for the fatty degeneration so frequently observed.

(476) Histology of Acne Varioliformis.

DR. BRONSON (*Journ. of Cut. and Genito-Urin. Dis.*, April, 1891) publishes the results of a microscopic examination in a case of acne varioliformis, which seems to show that the lesion begins as a deep-seated small-cell infiltration about the coil glands, which are situated beneath the hair follicles. In the beginning several independent foci of inflammation are present, which subsequently coalesce, producing a generalised infiltration of the derma with a tendency to central degeneration. As the infiltration approaches the surface it penetrates and disintegrates the overlying epidermis, separating it from the adjacent tissue. The central dry necrotic mass which represents the final stage in the evolution of the pathological process is made up of the epidermis with the underlying tissues of the derma, which have undergone a peculiar degeneration, and have become separated from the adjoining tissue by a sharp line of demarcation. The examination, unfortunately, gives little insight into the nature and cause of this singular affection, nor does it reveal why the affected tissues should be thrown off *en masse* rather than undergo a liquefactive degeneration. One would be led to suppose, however, that some agent, bacterial or chemical, had played an active part in the inflammation, causing a reaction on the part of the tissue and an endeavour to throw off the offending cause and its results. The formation of pus, which is not a constant feature of the papules, was doubtless due to a secondary infection by pus cocci.

(477) Gummatous Tuberculous Lymphangitis.

DR. WICKHAM (*Brit. Journ. of Derm.*, May, 1891) refers to a case under the care of M. Hallopeau, in which intradermic or subcutaneous nodosities arranged in rows in the lymphatic vessels of the ankles and thighs were shown by histological and experimental researches to be in reality tuberculous lesions of the lymphatics. This patient was one of those in whom Koch's fluid was injected in the Hôpital St. Louis. Between December 5th and January 10th he had five inoculations of half a milligramme to a milligramme and a half. The inoculations were followed by moderate local reaction, but the general reaction was so violent that the treatment was abandoned. After the last inoculation the patient got much worse, and was attacked with acute tuberculosis. He died in the end of February. At the necropsy very numerous small tuberculous granulations were found in the lungs.

BACTERIOLOGY.

(478) The Tetanus Bacillus.

GUIDO TIZZONI and GIUSEPPINA CATTANI have recently published some new facts concerning the bacillus of tetanus, which may possibly reconcile some discrepancies between their observations and those of Kitasato. They find (*Riforma Medica*, 1891, p. 157) that virulent cultures always liquefy gelatine, have a decidedly alkaline reaction, give out a disgusting odour, and cause death by acute tetanus in animals in twenty-four to thirty-six hours. Less virulent bacilli still liquefy gelatine, but the reaction soon becomes acid. Still more attenuated cultures show growth much sooner, give off far more gas, do not liquefy the gelatine, give out no bad smell, and have a marked acid reaction. Thus to various grades of virulence correspond notable alterations of the morphological and cultural relations, also of the products, and we here again observe the strict tie which exists between peptic enzyme and the toxine of tetanus bacilli. As to cultures in serum observers differ. Kitasato has not seen the liquefaction of coagulated blood serum, which has now been noticed by several observers besides the above. Again, as regards liquid serum, its successive solidification and liquefaction by the tetanus bacillus, as first noticed by the authors, has been confirmed by Nikiforoff (*Zeitschr. f. Hygiene*, Bd. 8, p. 497). The differences are possibly explained by assuming that Kitasato worked with a less virulent bacillus. The authors have already shown that cultures on meat broth and agar are weakened even in the second generation; the same weakening follows culture in other media, only after a long interval of some months. Cultures kept for more than a year under various gases (H, N, Co_2) gave attenuated cultures when transplanted into gelatine, but similar cultures *in vacuo* yielded very virulent cultures. Perhaps this was due to freer development of gas by the cultures *in vacuo*. The acids of attenuated cultures are fatty acids, chiefly butyric, as already shown by Kitasato and Weyl, but the addition of butyric acid made no difference to the culture; the acidity is thus a consequence rather than a cause and the fact that it is due to fatty acids, and its small amount, explain why it does not annul toxicity as mineral acids do. Virulent gelatine cultures continued to be very toxic for six months when filtered and kept in the dark, but after that time they lost their virulence altogether, or only caused emaciation and death in about three weeks. They were strongly acid and odourless. In contrast to this, the toxalbumin of tetanus, kept dry for a much longer period, preserved all its toxicity.